

## PATENT ABSTRACTS OF JAPAN

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(71)Applicant : KONICA CORP

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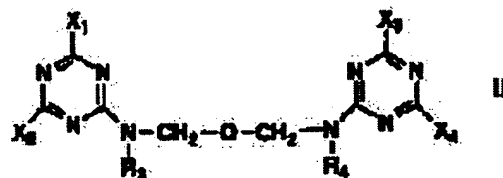
(72)Inventor : HIRAI KATSURA  
YOSHIZAWA TOMOMI  
NAGASHIMA TOSHIHARU

(54) IMAGE FORMING MATERIAL AND IMAGE FORMING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To enhance sensitivity to infrared exposure and developability and to prevent the occurrence of background stains by incorporating a specified compound and an infrared absorber.

SOLUTION: This image forming material is provided on a support with a photosensitive layer containing the infrared absorber and one of the compounds represented by formulae I and II in which each of X1-X3 is an H atom or a substituent and at least one of them is a -NR1-CO-O-R2 group: R1 is an H atom or an alkyl group; R2 is an alkyl, aralkyl, imido, triazolyl, pyridyl, sulfonyl, pyrazolyl, or aromatic group or a halogen atom; and each of R3 and R4 is same as R1. It is preferred that the compound of formula I has  $\geq 2$  -NR1-CO-O-R2 groups and that of formula II has  $\geq 4$  -NR1-CO-O-R2 groups.



LEGAL STATUS

[Date of request for examination]

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[Date of final disposal for application]

[Patent number]

[Date of registration]

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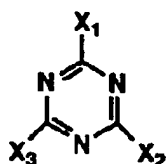
## CLAIMS

[Claim(s)]

[Claim 1] Image formation material characterized by having a photosensitive layer containing the compound and infrared-absorption agent which are expressed with the following general formula (1) or (2) on a base material.

[Formula 1]

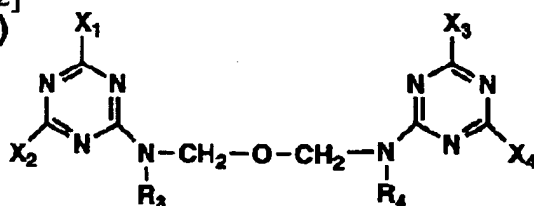
一般式(1)



X1, X2, and X3 express a hydrogen atom or a substituent respectively among [formula, and at least one of X1, X2, and the X3 is -NR1-CO-O-R2. R1 expresses a hydrogen atom or an alkyl group, and R2 expresses an alkyl group, an aralkyl machine, an imido basis, a thoria ZORIRU machine, a pyridyl machine, a sulfonyl machine, a pyrazolyl machine, a halogen atom, or a ring machine. ]

[Formula 2]

一般式(2)



X1, X2, X3, and X4 express a hydrogen atom or a substituent respectively among [formula, and at least one of X1 and the X2 and at least one of X3 and the X4 are -NR1-CO-O-R2. R1 expresses a hydrogen atom or an alkyl group, and R2 expresses an alkyl group, an aralkyl machine, an imido basis, a thoria ZORIRU machine, a pyridinium machine, a sulfonyl machine, a pyrazolyl machine, a halogen atom, or a ring machine. R3 and R4 are R1 and homonymy respectively. ]

[Claim 2] Image formation material according to claim 1 characterized by a photosensitive layer containing alkali fusibility polymer.

[Claim 3] Image formation material according to claim 2 characterized by alkali fusibility polymer being a novolak.

[Claim 4] Image formation material according to claim 2 characterized by alkali fusibility polymer being the vinyl polymerization object which has a carboxylic-acid machine, an amino group, or a hydroxyl in a side chain.

[Claim 5] The image formation method characterized by removing the exposure section with an alkaline developer after using infrared radiation on the photosensitive layer of an image formation material

according to claim 1, 2, 3, or 4 and drawing a picture.

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[Translation done.]

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the image formation method using the image formation material and it which have the photosensitive layer which insolubilizes to an alkaline developer by irradiation of infrared radiation.

[0002]

[Description of the Prior Art] As an image formation material which has the photosensitive layer of the negative mold of infrared photosensitivity, on U.S. Pat. No. 5,340,699 specifications, it has a photosensitive layer containing an acid generator, a resol resin, a novolak resin, and an infrared-absorption agent, and if it is used as an image formation material of a negative mold and the above-mentioned heat-treatment is not given by heat-treating after picture exposure and before a development, the technology used as an image formation material of a positive type is indicated.

[0003] However, this charge of a picture profile does not have the enough sensitivity to infrared radiation, and this problem has time in the picture exposure (drawing) by semiconductor laser etc. Moreover, also about development nature, coloring matter remains on a base material and there is a problem of a greasing occurring in printing.

[0004] Although the lithography original edition which the sensibility layer containing the polymer which has a block isocyanate and an isocyanate, and active hydrogen that can react was prepared [ original edition ] in JP,62-164049,A, and made the light-and-heat conversion matter contain is indicated, development nature is not enough, and a greasing is produced, and there is a problem whose \*\*\*\*-proof is not enough.

[0005] Although the negative-mold image recording material which has the high molecular compound which causes crosslinking reaction with heat, and the matter which absorbs light and generates heat is indicated by JP,9-43845,A, development nature is not enough and there is a problem which produces a greasing.

[0006]

[Problem(s) to be Solved by the Invention] The purpose of this invention is offering image formation material and the image formation method the sensitivity in exposure by infrared radiation having been high, development nature's having improved, and the greasing's having been prevented.

[0007]

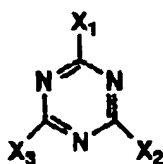
[Means for Solving the Problem] this invention which attains the above-mentioned purpose of this invention is following the (1) - (5).

[0008] (1) Image formation material characterized by having a photosensitive layer containing the compound and infrared-absorption agent which are expressed with the following general formula (1) or (2) on a base material.

[0009]

[Formula 3]

一般式(1)

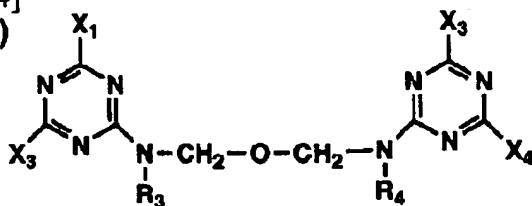


[0010] X1, X2, and X3 express a hydrogen atom or a substituent respectively among a formula, and at least one of X1, X2, and the X3 is -NR1-CO-O-R2. R1 expresses a hydrogen atom or an alkyl group, and R2 expresses an alkyl group, an aralkyl machine, an imido basis, a thoria ZORIRU machine, a pyridyl machine, a sulfonyl machine, a pyrazolyl machine, a halogen atom, or a ring machine.

[0011]

[Formula 4]

一般式(2)



[0012] X1, X2, X3, and X4 express a hydrogen atom or a substituent respectively among a formula, and at least one of X1 and the X2 and at least one of X3 and the X4 are -NR1-CO-O-R2. R1 expresses a hydrogen atom or an alkyl group, and R2 expresses an alkyl group, an aralkyl machine, an imido basis, a thoria ZORIRU machine, a pyridinium machine, a sulfonyl machine, a pyrazolyl machine, a halogen atom, or a ring machine. R3 and R4 are R1 and homonymy respectively.

[0013] (2) Image formation material given in the above (1) characterized by a photosensitive layer containing alkali fusibility polymer.

[0014] (3) Image formation material given in the above (2) characterized by alkali fusibility polymer being a novolak.

[0015] (4) Image formation material given in the above (2) characterized by alkali fusibility polymer being the vinyl polymerization object which has a carboxylic-acid machine, an amino group, or a hydroxyl in a side chain.

[0016] (5) The image formation method characterized by removing the exposure section with an alkaline developer after using infrared radiation on the photosensitive layer of an image formation material given in the above (1), (2), (3), or (4) and drawing a picture.

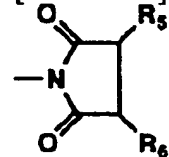
[0017] Hereafter, this invention is explained in full detail.

[0018] The compound (henceforth "the blocking isocyanate of this invention") expressed with the general formula (1) which the photosensitive layer of the image formation material of this invention contains, or (2) is explained.

[0019] as the imido basis which the alkyl groups (for example, a methyl group, an ethyl group, a propyl group, a butyl, etc.) of carbon numbers 1-4 are desirable as an alkyl group which R2 expresses in -NR1-CO-O-R2 which X1-X4 in a general formula (1) or (2) express, and R2 expresses -- for example, .

[0020]

[Formula 5]



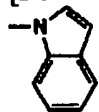
[0021] (R5 and R6 express a hydrogen atom, a sulfonic group, an alkyl group, or a hydroxyl respectively.) is mentioned. the pyridyl machine with which R2 expresses is replaced -- having -- \*\*\*\* -  
- for example [0022]

[Formula 6]



[0023] (L expresses the amino group which is not replaced [ a hydrogen atom, an alkyl group, a hydroxyl, substitution, or ].) is mentioned. As a sulfonyl machine with which R2 expresses, -SO<sub>2</sub>-L<sub>2</sub> (L<sub>2</sub> is Above L and homonymy.) is mentioned. as the ring machine with which R2 expresses -- for example, . [0024]

[Formula 7]



[0025] \*\*\*\*\*.

[0026] As substituents other than -NR<sub>1</sub>-CO-O-R<sub>2</sub> which X<sub>1</sub>-X<sub>4</sub> express, although the amino group which is not replaced [ the ring machine which is not replaced / the alkyl group which is not replaced / substitution or /, substitution, or /, substitution, or ], an amide group (RCONH- and R are the hydrocarbon group of a chain type or a ring type), or a halogen atom is desirable, it is not limited to these.

[0027] As for the compound expressed with a general formula (1), it is desirable to have -NR<sub>1</sub>-CO-O-R<sub>2</sub> two or more, and, as for the compound expressed with a general formula (2), it is desirable to have -NR<sub>1</sub>-CO-O-R<sub>2</sub> four or more.

[0028] The blocking isocyanate of this invention can compound JP,7-2804,A as reference.

[0029] As an infrared-absorption agent used for this invention, the infrared-absorption coloring matter which has absorption in an infrared region from a visible ray with a wavelength of 700nm or more, carbon black, magnetic powder, etc. can be used. Especially a desirable infrared-absorption agent has an absorption peak in 700-850nm, and is infrared-absorption coloring matter whose molar extinction coefficient epsilon in a peak is 105 or more.

[0030] As the above-mentioned infrared-absorption coloring matter, cyanine system coloring matter, SUKUARIUMU system coloring matter, crocodile NIUMU system coloring matter, AZURENIUMU system coloring matter, phthalocyanine system coloring matter, naphthalocyanine system coloring matter, poly methine system coloring matter, naphthoquinone system coloring matter, thio pyrylium system coloring matter, dithiol metal complex system coloring matter, anthra kino system coloring matter, India aniline metal complex system coloring matter, CT coloring matter between molecules, etc. are mentioned.

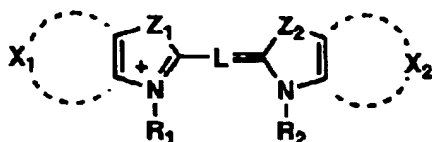
[0031] Moreover, the compound of a publication is mentioned to JP,63-139191,A, 64-33547, JP,1-160683,A, 1-280750, 1-293342, 2-2074, 3-26593, 3-30991, 3-34891, 3-36093, 3-36094, 3-36095, 3-42281, 3-103476, etc. as the above-mentioned infrared-absorption coloring matter.

[0032] In this invention, especially the cyanine dye expressed with the following general formula (3) or (4) is desirable as an infrared-absorption agent.

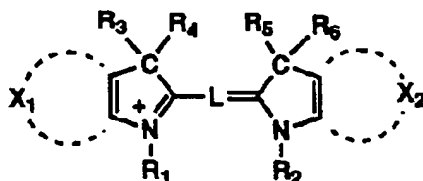
[0033]

[Formula 8]

## 一般式(3)



## 一般式(4)



[0034] In a general formula (3) and (4), Z1 and Z2 express a sulfur atom, a selenium atom, or an oxygen atom respectively, X1 and X2 express a nonmetallic atom group required to form the benzo condensed ring or the naphth condensed ring which may have the substituent respectively, R1 and R2 express a substituent respectively, and either R1 or R2 have an anionic dissociative machine. R3, R4, R5, and R6 express the alkyl group, hydrogen atom, or halogen atom of the carbon atomic numbers 1-3 respectively. L expresses the chain of conjugate combination of the carbon atomic number 5-13. ] In this invention, especially the cyanine dye expressed with the aforementioned general formula (3) or (4) is desirable as an infrared-absorption agent.

[0035] This general formula (3) or (4) form a cation, and the cyanine dye expressed with a general formula (3) or (4) includes what has an opposite anion. In this case, as an opposite anion, alkyl boron, such as Cl<sup>-</sup>, Br<sup>-</sup>, ClO<sub>4</sub><sup>-</sup>, BF<sub>4</sub><sup>-</sup>, and t-butyl triphenyl boron, etc. is mentioned.

[0036] In a general formula (3) and (4), when the laser which emits infrared radiation as the light source of picture exposure is used, as for the carbon atomic number (n) of the chain of conjugate combination expressed with L, it is desirable to choose an effective value according to the dispatch wavelength of this laser. For example, when using an YAG laser with a dispatch wavelength of 1060nm, as for n, 9-13 are desirable. Moreover, the amount of this conjugate bond part can have arbitrary substituents, and the amount of conjugate bond part may make a ring form by two or more substituents.

[0037] In a general formula (3) and (4), it can have arbitrary substituents to the ring expressed with the ring expressed with X1, and X2. The basis chosen from the alkyl group of a halogen atom and the carbon atomic numbers 1-5, the alkoxy group of the carbon atomic numbers 1-5, -SO<sub>3</sub>M, and -COOM (M is a hydrogen atom or an alkali-metal atom) as this substituent is desirable.

[0038] Although R1 and R2 are arbitrary substituents respectively Preferably, it is alkoxy-group;-(CH<sub>2</sub>)<sub>n</sub>-O-k-(CH<sub>2</sub>)<sub>m</sub>OR (n and m express the integer of 1-3, and, as for k, 0 or 1, and R express the alkyl group of the carbon atomic numbers 1-5 respectively.) of the alkyl group of the carbon atomic numbers 1-5, or the carbon atomic numbers 1-5. either;R1 or R2 -R-SO<sub>3</sub>M -- another side -R-SO<sub>3</sub>- (R -- the alkyl group of the carbon atomic numbers 1-5 --) For either [ ; showing an alkali-metal atom, or ] R1 or R2 another side is [ M ] -R-COO at -R-COOM. - (R expresses the alkyl group of the carbon atomic numbers 1-5, and M expresses an alkali-metal atom.) It comes out. As for R1 and R2, it is desirable from the point of sensitivity and development nature that either R1 or R2 are [ -R-SO<sub>3</sub>- or -R-COO-, and another side ] -R-SO<sub>3</sub>M or -R-COOM.

[0039] As for the cyanine dye expressed with a general formula (3) or (4), what shows an absorption peak in 900-1200nm when using semiconductor laser as the light source of picture exposure and using an YAG laser in 750-900nm, and has the molar extinction coefficient of epsilon> 1x10<sup>5</sup> is desirable.

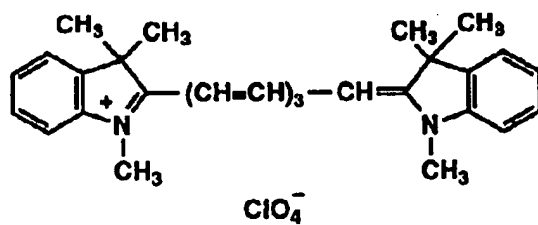
[0040] Although the typical example of the infrared-absorption agent preferably used for this invention is given to below, it is not limited to these.

[0041]

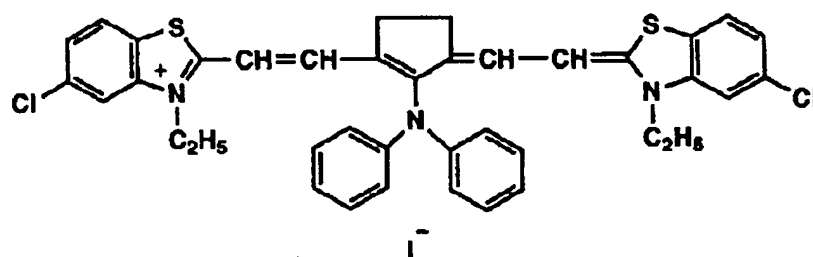
[Formula 9]



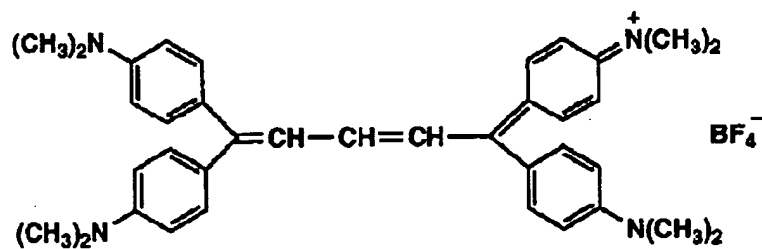
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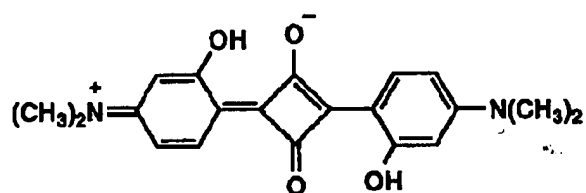
IR2



IR3



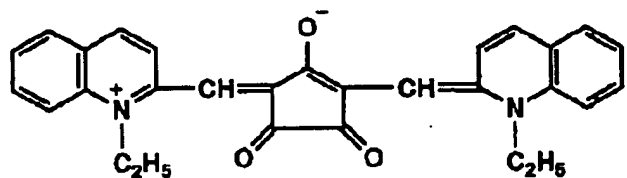
IR4



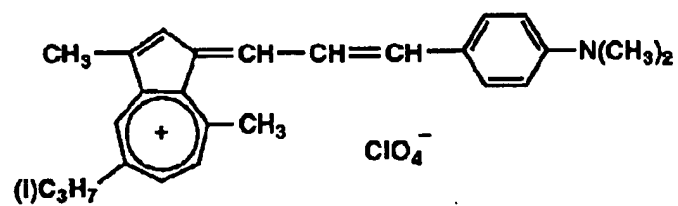
[0042]

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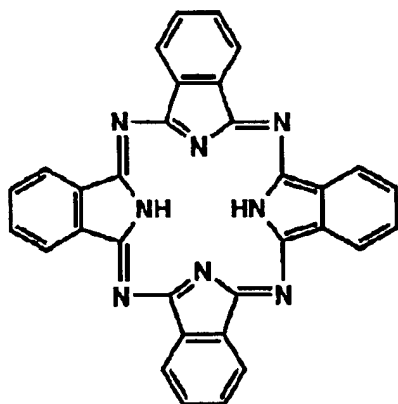
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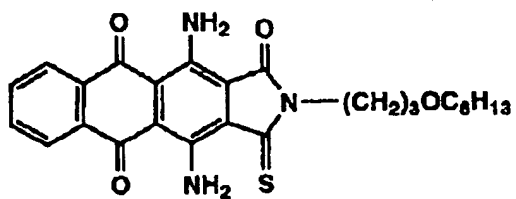
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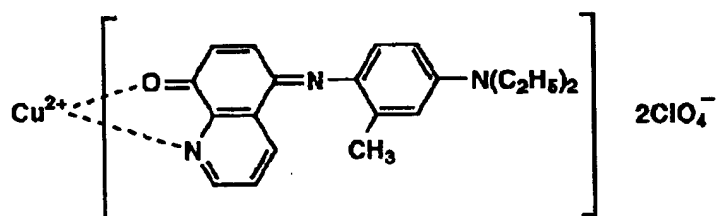
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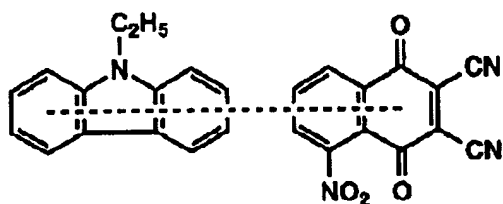
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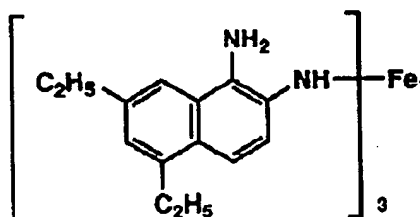
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IR11



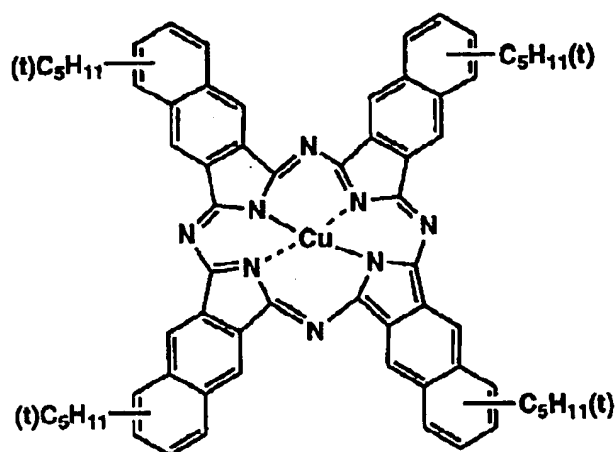
IR12



[0044]

[Formula 12]

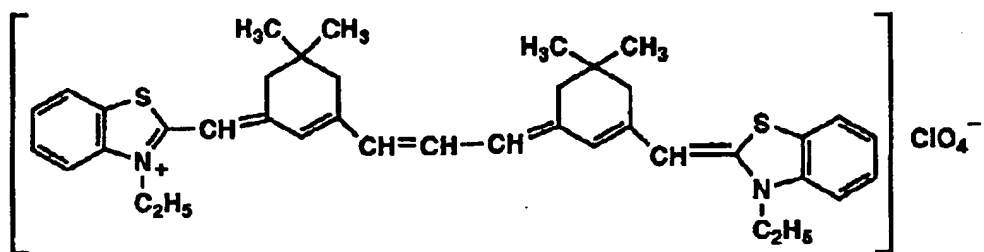
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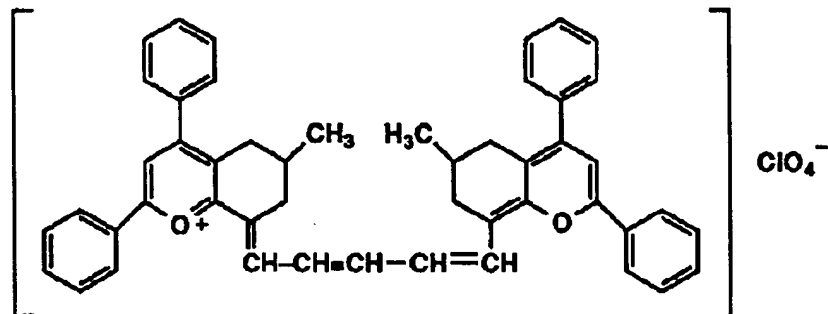
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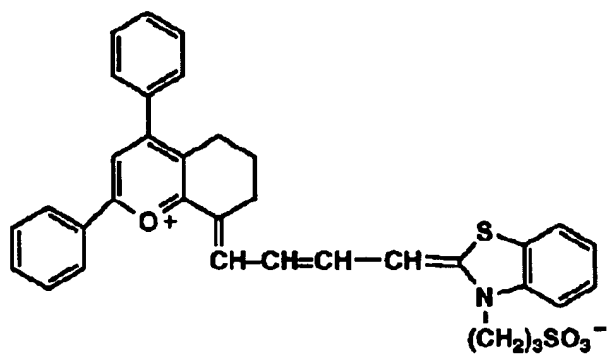
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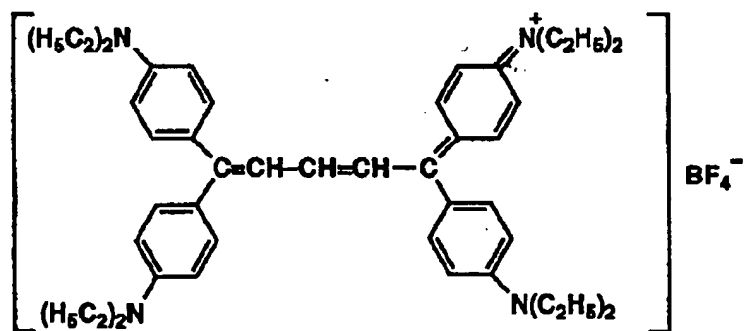
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IR16



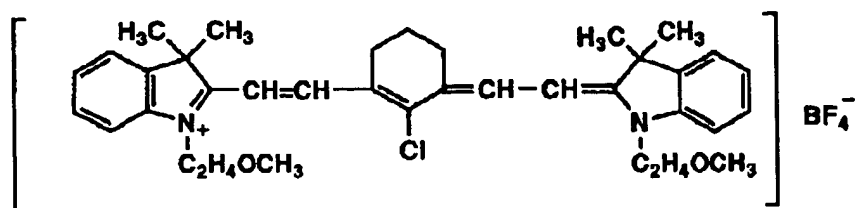
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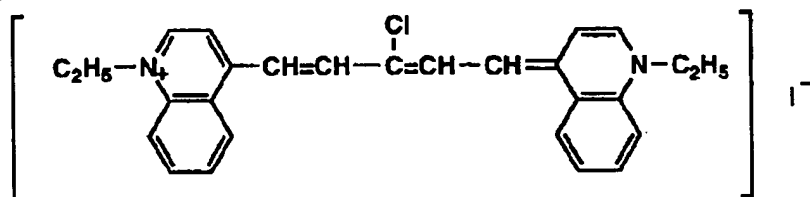
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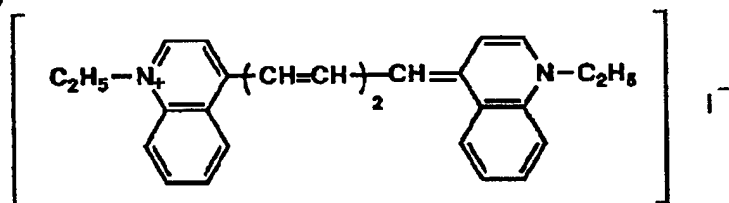
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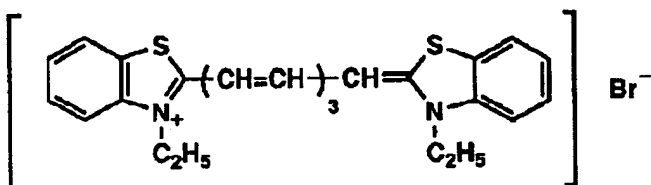
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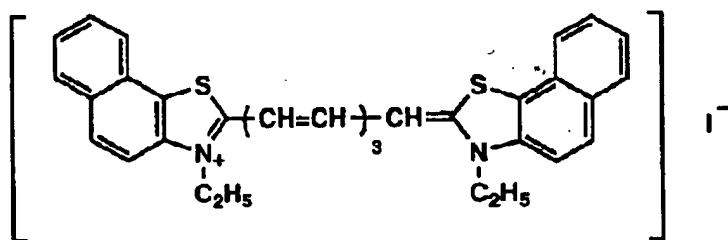
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IR21



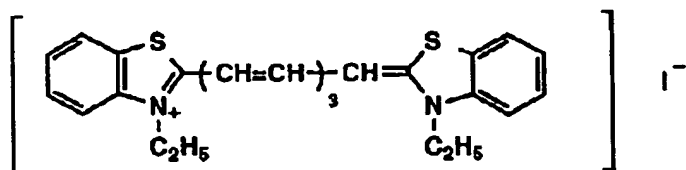
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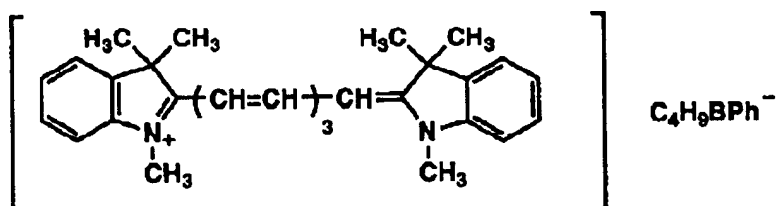
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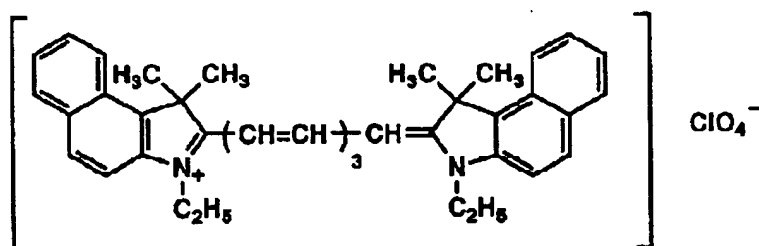
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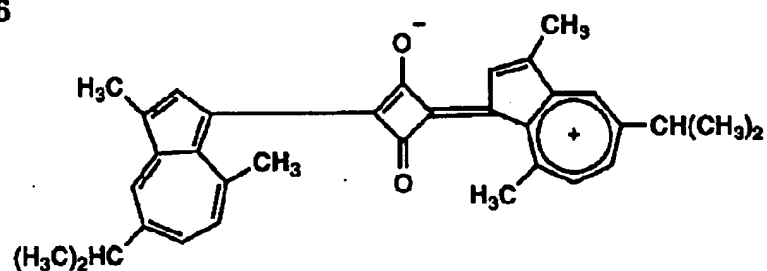
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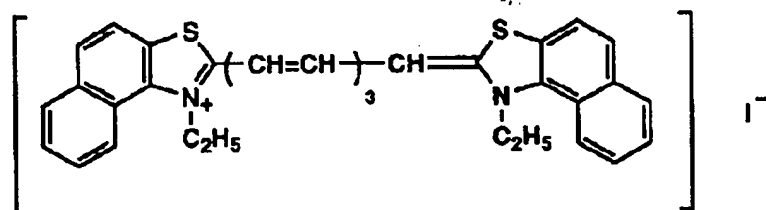
IR25



IR26



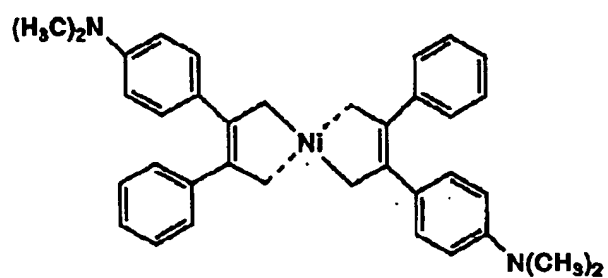
IR27



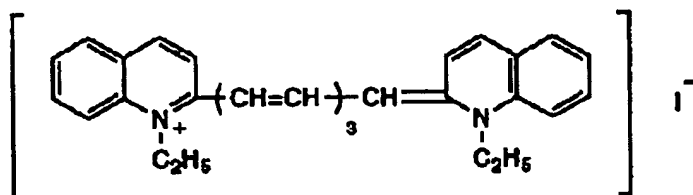
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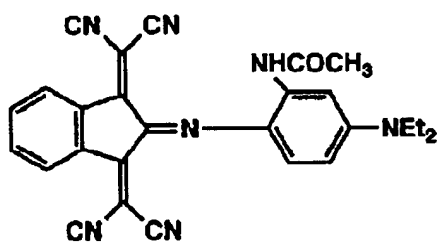
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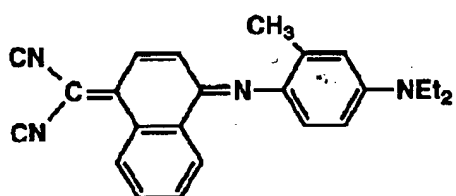
IR29



IR30



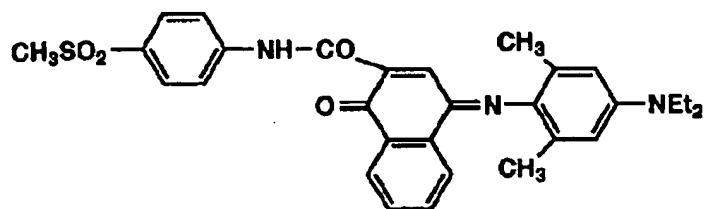
IR31



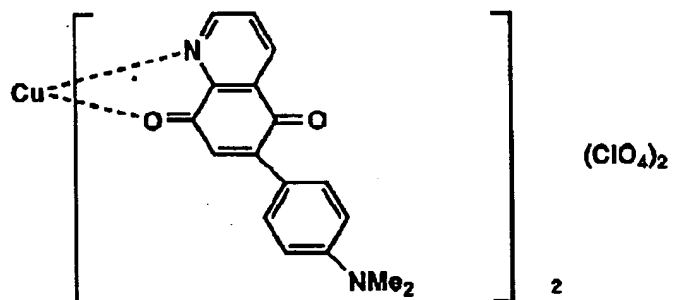
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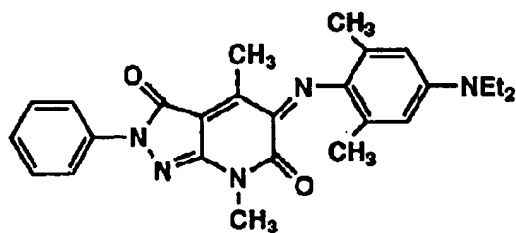
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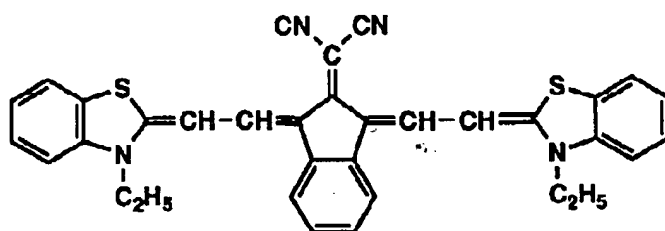
IR33



IR34



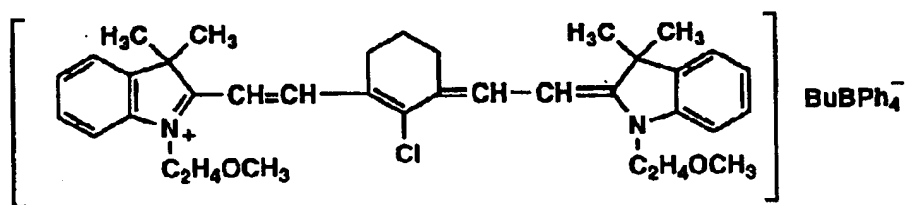
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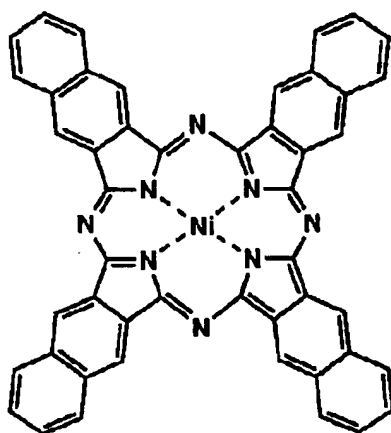
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[Formula 18]

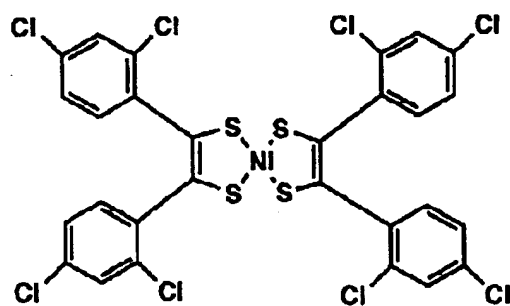
IR36



IR37



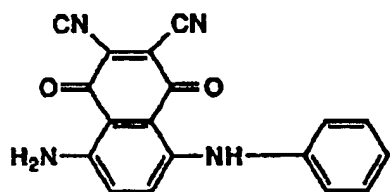
IR38



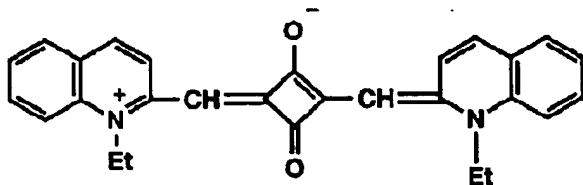
[0051]

[Formula 19]

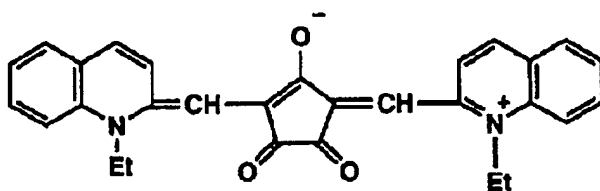
IR39



IR40



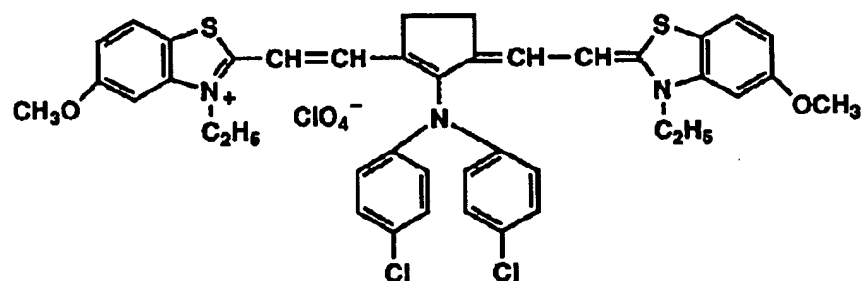
IR41



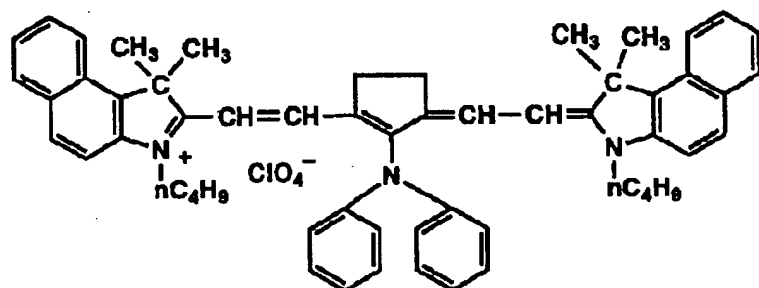
[0052]

[Formula 20]

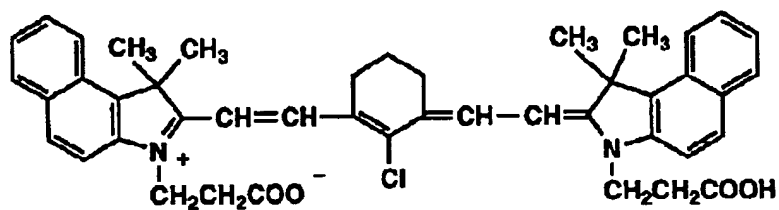
IR42



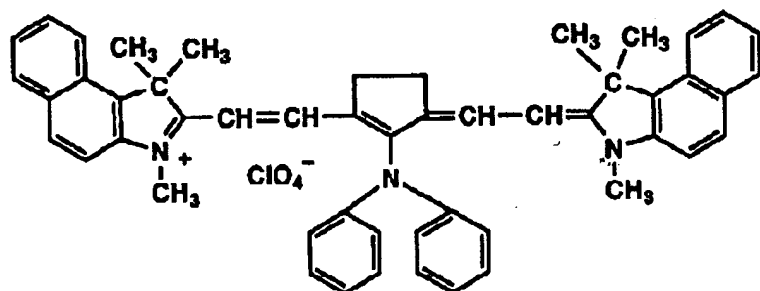
IR43



IR44



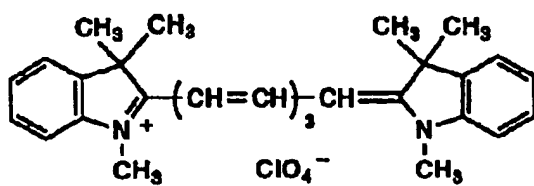
IR45



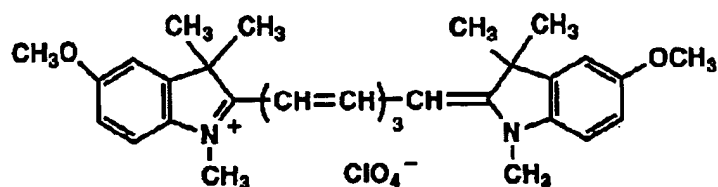
[0053]

[Formula 21]

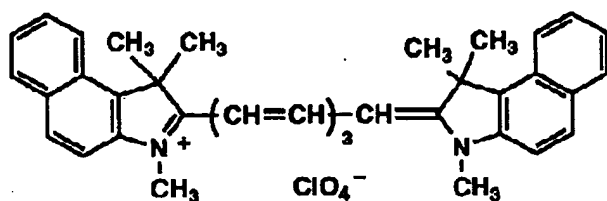
IR46



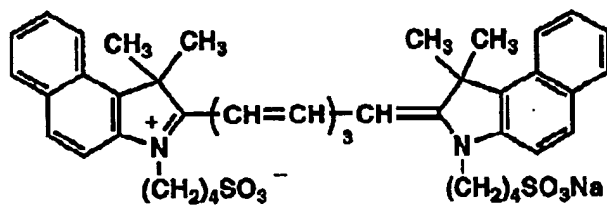
IR47



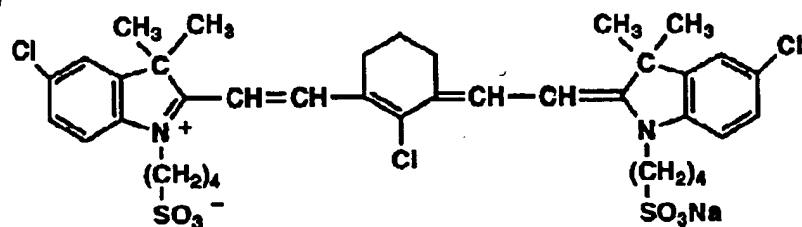
IR48



IR49



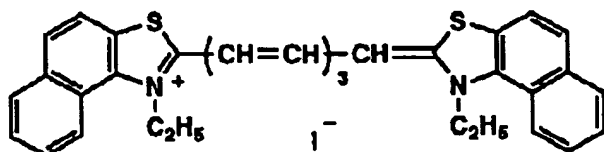
IR50



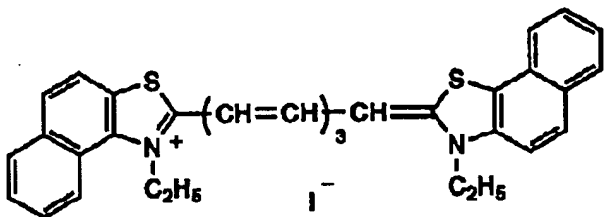
[0054]

[Formula 22]

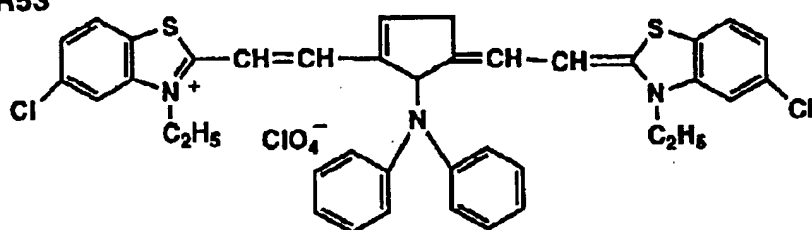
IR51



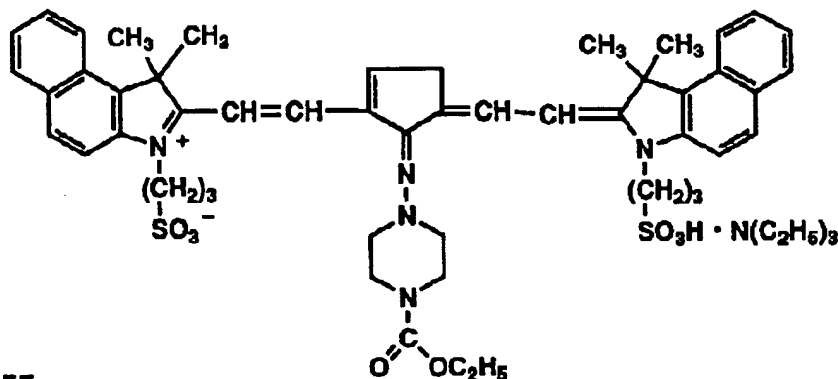
IR52



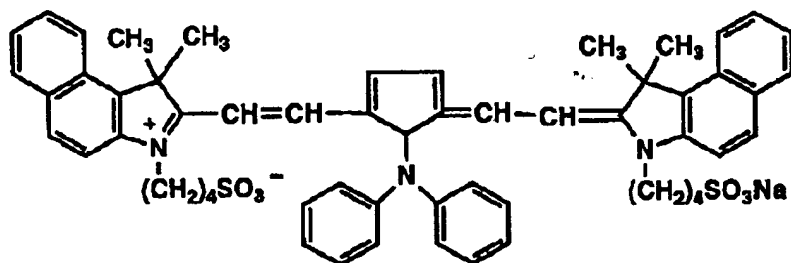
IR53



IR54



IR55



[0055] Although these coloring matter is compoundable by the well-known method, the following commercial elegance can also be used.

[0056] Nippon Kayaku: -- IR750(anthraquinone system);IR002 and IR003(aluminum system);IR820 (poly methine system); -- inter record gap022, inter-record-gap033(gene MONIUMU system);CY-2, CY-4, CY-9, and CY-20 -- 3 -- Ito \*\*:KIR103 and SIR103(phthalocyanine system); -- KIR101 and SIR114 [ ;P ] (anthraquinone system) A1001, PA1005, PA1006, and SIR128 (metal complex system Dainippon Ink chemistry: -- Fastogen blue8120 -- green -- chemistry:MIR-101, and 1011 and 1021 -- in

addition to this, it is marketed also from each company, such as a Japanese sensitizing dye, Sumitomo Chemical, and Fuji Photo Film

[0057] In this invention, the addition of an infrared-absorption agent has the desirable range of 0.5 - 5wt%. If this addition exceeds 5wt(s)%, the development nature of the non-picture section (exposure section) will fall, and, less than [ 0.5wt% ], the development-proof nature of the picture section will fall.

[0058] It is desirable to make the sensibility layer of the image formation material of this invention contain alkali fusibility polymer. As alkali fusibility polymer, the vinyl polymerization object which has a novolak and a carboxylic-acid machine, an amino group, or a hydroxyl in a side chain is desirable.

[0059] As a novolak, the copolycondensation object resin of phenol-formaldehyde resin, a cresol formaldehyde resin, a phenol cresol formaldehyde copolycondensation object resin that is indicated by JP,55-57841,A, p-substitution phenol which is indicated by JP,55-127553,A and a phenol or cresol, and formaldehyde etc. is mentioned, for example.

[0060] The polymer which has the structural unit expressed with the polymer which has a novolak resin and a hydroxy styrene unit, for example, or the after-mentioned general formula (5) as a vinyl polymerization object which has the above-mentioned carboxylic-acid machine, an amino group, or a hydroxyl in a side chain, other well-known acrylic resin, etc. can be mentioned.

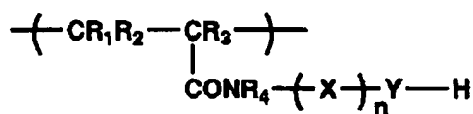
[0061] Things can perform mentioning the polyhydroxy styrene indicated by JP,52-41050,B, for example, a hydroxy styrene copolymer, etc. as a polymer which has a hydroxy styrene unit.

[0062] The polymer which has the structural unit expressed with the above-mentioned general formula (5) is the homopolymer which has the repeat structure of only this structural unit, or a copolymer which combined this structural unit and one or more sorts of structural units shown with the structure where the unsaturation double bond of other vinyl system monomers was made to cleave.

[0063]

[Formula 23]

—般式(5)



[0064] In a general formula (5), respectively, R1 and R2 express an alkyl group or carboxylic-acid machines, such as a hydrogen atom, a methyl group, and an ethyl group, and they are a hydrogen atom preferably. R3 expresses alkyl groups, such as halogen atoms, such as a hydrogen atom, a chlorine atom, and a bromine atom, or a methyl group, and an ethyl group, and is a hydrogen atom or a methyl group preferably. R4 expresses alkyl groups, such as a hydrogen atom, a methyl group, and an ethyl group, a phenyl group, or a naphthyl group.

[0065] Although the phenylene group or naphthylene machine also containing what has a substituent is expressed and alkoxy groups, such as halogen atoms, such as alkyl groups, such as a methyl group and an ethyl group, a chlorine atom, and a bromine atom, a carboxylic-acid machine, a methoxy machine, and an ethoxy basis, a hydroxyl, a sulfonic group, a cyano group, a nitro group, an acyl group, etc. are mentioned as this substituent, Y does not have a substituent preferably or is replaced by the methyl group.

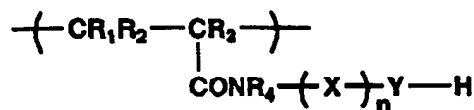
[0066] X is the divalent organic machine which connects a nitrogen atom and an aromatic carbon atom, n expresses the integer of 0-5 and n is 0 preferably.

[0067] The polymer which has the structural unit expressed with a general formula (5) can be expressed with (a) - (h) still more concretely.

[0068]

[Formula 24]

一般式(5)



- (a)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_2}{\text{CR}_1}\text{---})_m\text{---}$
- (b)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_2}{\text{CR}_1}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{CN}}{\text{CR}_3}\text{---})_l\text{---}$
- (c)  $\text{---}(\text{CH}_2\text{---}\underset{\text{C}_6\text{H}_4\text{X}}{\text{CR}_1}\text{---})_n\text{---}$
- (d)  $\text{---}(\text{CH}=\underset{\text{O}}{\text{C}}\text{---CH}=\underset{\text{O}}{\text{C}}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{C}_6\text{H}_4\text{X}}{\text{CR}_1}\text{---})_l\text{---}$
- (e)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_2}{\text{CR}_1}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{COOH}}{\text{CR}_3}\text{---})_l\text{---}$
- (f)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_2}{\text{CR}_1}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{COOH}}{\text{CR}_3}\text{---})_l\text{---}(\text{CH}_2\text{---}\underset{\text{CN}}{\text{CR}_4}\text{---})_k\text{---}$
- (g)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOC}_2\text{C}_4\text{OH}}{\text{CR}_1}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_3}{\text{CR}_2}\text{---})_l\text{---}(\text{CH}_2\text{---}\underset{\text{CN}}{\text{CR}_4}\text{---})_k\text{---}$
- (h)  $\text{---}(\text{CH}_2\text{---}\underset{\text{COOC}_2\text{H}_4\text{OH}}{\text{CR}_1}\text{---})_m\text{---}(\text{CH}_2\text{---}\underset{\text{COOR}_3}{\text{CR}_2}\text{---})_l\text{---}(\text{CH}_2\text{---}\underset{\text{CN}}{\text{CR}_4}\text{---})_k\text{---}(\text{CH}_2\text{---}\underset{\text{COOH}}{\text{CR}_5}\text{---})_s\text{---}$

[0069] (a) In - (h), R<sub>1</sub>-R<sub>5</sub> express a hydrogen atom, an alkyl group, or a halogen atom respectively, and X expresses an alkyl group or a halogen atom. Moreover, m, n, l, k, and s express mol % of each structural unit.

[0070] Moreover, a novolak resin, the polymer which has a hydroxy styrene unit, and the polymer which has the structural unit expressed with the aforementioned general formula (5) can also be used together.



[0071] Furthermore, to the photosensitive constituent of this invention, in order to improve the admiration oily skin of this photosensitive constituent, the resin of lipophilic property can be added.

[0072] The condensate of the phenols replaced as a resin of the aforementioned lipophilic property by the alkyl group of the carbon numbers 3-15 which are indicated by JP,50-125806,A, for example, and an aldehyde, for example, t butylphenol formaldehyde resin etc., is usable.

[0073] The photosensitive layer of the image formation material of this invention can be made to contain coloring matter other than the above, a pigment, a sensitizer, etc. further if needed.

[0074] It is made to dissolve in the following solvent which dissolves each aforementioned component, and by making the front face of a suitable base material carry out application dryness of these, the sensibility layer of this invention can prepare a sensibility layer, and can make it the image formation material of this invention.

[0075] As the above-mentioned solvent, a propylene glycol monomethyl ether, the propylene-glycol monoethyl ether, a methyl cellosolve, methyl-cellosolve acetate, ethylcellosolve, ethylcellosolve acetate, a dimethylformamide, dimethyl sulfoxide, a dioxane, an acetone, a cyclohexanone, a trichloroethylene, a methyl ethyl ketone, etc. are mentioned. These solvents come out independently, or two or more kinds use them, mixing.

[0076] A well-known method, for example, a rotation application, a wire bar application, a DIP application, an air knife application, a roll application, a blade application, a curtain application, etc. are conventionally possible for the method of application. Although a coverage changes with uses, speaking of the photosensitive lithography version, 0.5 - 5.0 g/m<sup>2</sup> is desirable as a solid content, for example.

[0077] As for the base material which prepares the photosensitive layer of this invention, the paper in which metallic foils to which plating or the metal plate by which vacuum evaporation was carried out, paper, plastic film and the glass plate, and the resin were applied for metal plates, such as aluminum, zinc, steel, and copper, and chromium, zinc, copper, nickel, aluminum, iron, etc., such as paper and aluminum, were stretched, the hydrophilicity-ization-processed plastic film are mentioned. Among these, an aluminum plate is desirable. When applying this invention to the photosensitive lithography version, it is desirable to use the aluminum plate to which surface treatment, such as sealing, etc. is performed as a base material graining processing, anodizing, and if needed. A well-known method is applicable to these processings.

[0078] As the method of graining processing, the method of \*\*\*\*\*ing, for example by the mechanical method and electrolysis is mentioned. As the mechanical method, the ball grinding method, a brushing method, the grinding method by liquid honing, buffing, etc. are mentioned, for example. independent [ in various above-mentioned methods ] according to composition of aluminum material etc. -- or it can combine and use

[0079] In order to \*\*\*\*\* by electrolysis, inorganic acids, such as a phosphoric acid, a sulfuric acid, a hydrochloric acid, and a nitric acid, are performed using the independent bath which it was, and was carried out and was mixed two or more sorts. After graining processing, if needed, by alkali or the solution of an acid, a desmut treatment is performed, and it neutralizes and rinses.

[0080] Anodizing electrolyzes an aluminum plate as an anode plate, using one sort or the solution included two or more sorts as the electrolytic solution, and a sulfuric acid, a chromic acid, oxalic acid, a phosphoric acid, a malonic acid, etc. are performed. 1 - 50 mg/dm<sup>2</sup> is suitable, and is 10 - 40 mg/dm<sup>2</sup> preferably, and the formed amount of anodized coating is 25 - 40 mg/dm<sup>2</sup> especially preferably. The amount of anodized coating is immersed in a phosphoric-acid chromic-acid bath liquid (85% liquid of phosphoric acids : 35ml, a chrome oxide (IV) : dissolving 20g in 1l. water production) in an aluminum plate, dissolves an oxide skin, and is calculated from the weight change measurement before and behind the coat dissolution of a board.

[0081] As for sealing, boiling-water processing, steam treatment, sodium silicate processing, dichromate solution processing, etc. are mentioned as an example. In addition, under-coating processing by the solution of a water-soluble-polymer compound and metal salts, such as fluoride zirconic acid, can also be performed to an aluminum plate base material.

[0082] The image formation material of this invention can perform picture exposure using the light

source which emits infrared radiation. As this light source, semiconductor laser, helium-Ne laser, an YAG laser, a carbon dioxide laser, etc. are mentioned. 50mW or more is suitable for an output, and it is 100mW or more preferably.

[0083] As a developer used for the development of the image formation material of this invention, a drainage system alkali developer is suitable. It is 0.1 - 10 % of the weight suitably [ that the concentration of the aforementioned alkali-metal salt with which the solution of alkali-metal salts, such as a sodium hydroxide, a potassium hydroxide, a sodium carbonate, potassium carbonate, a meta-sodium silicate, a meta-potassium silicate, sodium diphosphate, and the third sodium phosphate, is mentioned uses a drainage system alkali developer (henceforth the developer of this invention) in 0.05 - 20% of the weight of the range ], and more preferably.

[0084] In the image formation method of this invention, organic solvents, such as an anionic surfactant, an amphoteric surface active agent, and alcohol, can be added to a developer if needed.

[0085] As an organic solvent, a propylene glycol, an ethylene glycol monophenyl ether, benzine alcohol, n-propyl alcohol, etc. are useful.

[0086]

[Example] Next, an example explains this invention still more concretely. In addition, in the following examples and examples of comparison, the "section" means the "weight section."

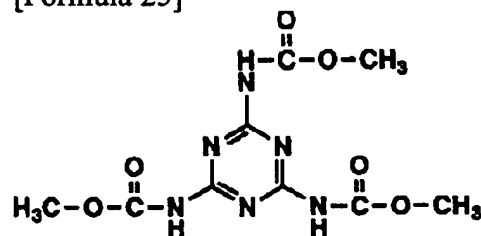
[0087] After performing indirect desulfurization fat processing for an aluminum plate (the quality of the material 1050, temper H16) with a creation thickness [ of example 1 base material ] of 0.24mm at 60 degrees C in 5% caustic-alkali-of-sodium solution for 1 minute, electrolytic etching processing was performed in 1l. 0.5-mol hydrochloric-acid solution on temperature; 25 degree C, current density; 60 A/dm<sup>2</sup>, and the conditions for processing-time; 30 seconds. Subsequently, after performing 60 degrees C and the desmut treatment for 10 seconds in 5% caustic-alkali-of-sodium solution, boiling water sealing was performed for 20 seconds by 30-degree C hot water, and the aluminum plate which performed anodizing in 20% sulfuric-acid solution the condition for [ temperature; 20 degree-C, current density; 3 A/dm<sup>2</sup>, and processing-time; ] 1 minute and which is a base material for the charges of a lithography plate was produced further again.

[0088] It applied using the rotation application machine, it dried for 2 minutes at 100 degrees C, and image formation material was obtained so that the thickness after drying the photosensitive-layer application liquid of the following composition on the base material of the example 1 aforementioned aluminum plate might become 2 g/m<sup>2</sup>.

[0089]

Composition of photosensitive-layer application liquid Infrared-absorption agent Instantiation compound IR 49 The ten sections Blocking isocyanate A of this invention The 20 sections. [0090]

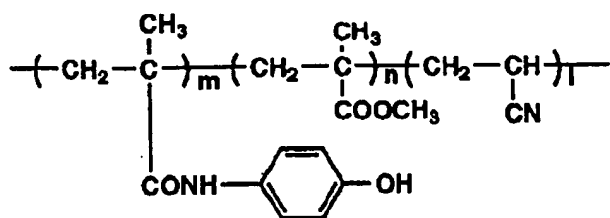
[Formula 25]



[0091]

Novolak-resin A The 70 sections. [0092]

[Formula 26]



(Mw=22000 Mw/Mn=1.5 m:n:l=30:40:30)

[0093]

Propylene glucol monomethyl ether Picture exposure was performed for the image formation material of 1000 \*\*\*\* on the photosensitive-layer front face by semiconductor laser (wavelength of 830nm, 500mW of outputs). The laser beam diameter was 13 micrometers in 1 of the intensity in a peak / e2. Moreover, resolution set the scanning direction and the direction of vertical scanning to 2000DPI. The photosensitive layer was heat-treated for 30 seconds at 120 degrees C after exposure using the infrared heater. furthermore, the object for the Konica PS plates -- it rinsed and the lithography version was manufactured, after being immersed in the 27-degree C developer which diluted developer SDR-1 (Konica Corp. make) to the 6 times as many volume ratio as this with water for 25 seconds and removing the non-picture section (unexposed section)

[0094] In the above-mentioned conditions, exposure energy (mJ/cm2) required for hardening by which the exposure section is not developed estimated sensitivity, and the generating situation of the dirt (printing dirt) of the non-picture section by printing and printing number of sheets until dirt is generated in the non-picture section of the printing version estimated \*\*\*\*-proof.

[0095] The same experiment as an example 1 was conducted except having changed the infrared-absorption agent under composition of example 2 photosensitive-layer application liquid into the instantiation compound IR 14, and having changed the light source for picture exposure into the YAG laser with a dispatch wavelength of 1064nm.

[0096] The same experiment as an example 1 was conducted except having changed the infrared-absorption agent under composition of example 3 photosensitive-layer application liquid into carbon black.

[0097] The same experiment as an example 1 was conducted except having changed the infrared-absorption agent under composition of example 4 photosensitive-layer application liquid into carbon black, and having changed the light source for picture exposure into the YAG laser with a dispatch wavelength of 1064nm.

[0098] The same experiment as an example 1 was conducted except having changed composition of example 5 photosensitive-layer application liquid below.

[0099]

Composition of photosensitive-layer application liquid Infrared-absorption agent Instantiation compound IR 49. Section [ Ten / ] Blocking Isocyanate A of this Invention (above) 20 Sections Novolak-Resin A (above) 50 Sections Vinyl Polymerization Object A 20 Sections (Copolymer of 4-Hydroxyphenyl MEKURIRU Amide / Acrylonitrile / Methyl Methacrylate / Acrylic-Acid =30/30/10/30 (Mole Ratio), Weight Average Molecular Weight 30,000)

Propylene glucol monomethyl ether The same experiment as an example 5 was conducted except having changed the vinyl polymerization object A under composition of 1000 section examples 6 photosensitive-layer application liquid into the following vinyl polymerization object B.

[0100] The vinyl polymerization objects B are the copolymer of 4-hydroxyphenyl MEKURIRU amide / acrylonitrile / methyl methacrylate / 2-hydroxyethyl methacrylate =30/30/10/30 (mole ratio), and weight average molecular weight 30,000.

[0101] The same experiment as an example 5 was conducted except having changed the vinyl polymerization object A under composition of example 7 photosensitive-layer application liquid into the

following vinyl polymerization object C.

[0102] The vinyl polymerization objects C are the copolymer of 4-hydroxyphenyl MEKURIRU amide / acrylamide / methyl methacrylate / 2-hydroxyethyl methacrylate =30/30/10/30 (mole ratio), and weight average molecular weight 30,000.

[0103] The same experiment as an example 5 was conducted except having changed the vinyl polymerization object A under composition of example 8 photosensitive-layer application liquid into the following vinyl polymerization object D.

[0104] The vinyl polymerization objects D are the copolymer of styrene / maleic-acid =50 / 50 (mole ratio), and weight average molecular weight 30,000.

[0105] The same experiment as an example 5 was conducted except having changed the blocking isocyanate A of this invention under composition of the photosensitive-layer application liquid of example of comparison 1 example 1 into the high molecular compound (the copolymer of benzyloxy carbonylamino ethyl methacrylate / 4-methylphenyl sulfonyl methacrylamide =20 / 80 (mole ratio), weight-average-molecular-weight 45,000) of the synthetic example 7 given in JP,9-43845,A.

[0106] The same experiment as an example 5 was conducted except having changed into the block isocyanate which compounded the blocking isocyanate A of this invention under composition of the photosensitive-layer application liquid of example of comparison 2 example 1 according to the synthetic example 1 given in JP,62-164049,A.

[0107] The above result is shown in the following table 1.

[0108]

[Table 1]

	感度(mJ/cm <sup>2</sup> )	印刷汚れ	耐刷性(万)
実施例 1	250	○	2
実施例 2	200	○	2
実施例 3	400	○	2
実施例 4	300	○	2
実施例 5	300	○	2
実施例 6	300	○	2
実施例 7	300	○	2
実施例 8	300	○	2
比較例 1	400	△	2
比較例 2	400	△	1

○:印刷物の非画線部が汚れない

△:印刷物の非画線部に若干汚れが発生した

[0109]

[Effect of the Invention] The purpose of this invention has the sensitivity which was excellent to exposure by infrared radiation, its development nature improves, and image formation material and the image formation method that the greasing was prevented are offered.

[Translation done.]